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PAPIER MACHE.

By James Carruthers.

FOR a century and a quarter papier mache has taken rank as an important decorative material for private dwellings and other structures. The more attractive these are sought to be made the more necessity apparently for its use. In colonial times papier mache enrichments were extensively used on walls and ceilings; subsequently it fell into comparative neglect; now again it is revived. Its use extends to decorative work of a structural character. As its name implies, paper is a prime constituent of papier mache to which is added glue, whitening and sulphide of zinc. In castings, which are distinct from hand and power pressed work, plaster of Paris takes the place of whitening. Sulphide of zinc not only constitutes a size but secures a white surface. Fragments of coarse paper having been mixed with water are reduced by boiling to a pulp, after which the other ingredients are added, and the boiling is continued until the whole are incorporated. We simply indicate the basis of papier mache, each manufacturer following his own formula. Much discussion has arisen as to what is, and what is not the true article. There is unquestionably considerable difference in quality between various products put forth under the name. Many manufacturers are constantly experimenting with a view to more perfect results. In the general trade the term is applied to paper pressed in successive layers, and whilst in a damp state, in a mould, by means of power presses. For art manufactures, the relief is either straight raised work or undercut, the papier mache being pressed in in separate layers after it has been brought to the consistence of dough, and presses are exclusively employed for undercut work. For cast work the papier mache is poured into the mould in a semi-fluid condition, somewhat of the consistence of molasses. For undercut work, not cast, the mould must possess an elastic character to enable the operator to pull it off without injuring the impression. This mould is accordingly of gelatine, and on being removed reverts to its former shape. It can only be used whilst fresh. Before inserting the papier mache, the gelatine mould is covered with a preparation of whiting and oil. It is invariably in one piece both for undercut and straight work. For castings the mould consists of two or more parts. The designs for these moulds are carved in wood, or modeled in clay, plaster of Paris or other suitable material, and an impression is then taken in reverse. For pieces intended to be extensively multiplied, as relief work for furniture, the mould is of steel, copper or other metal, preferably copper.

Should the designs in relief, straight or undercut, be of an extremely delicate character, as in the case of foliations of stems, leaves and flowers to be be placed on a separate ground, the parts are tied together with fine wire before being hung up to dry, in order to prevent their falling apart. When dry, the papier mache attains a hardness often even to the point of brittleness. It is attached to plaster and wood surfaces either by glue or dextrine or with the composition of which it consists, applied by layer in semi-liquid form. In addition nails are used, the apertures for which are made in the material before it has completely hardened. The heads of these being slightly sunk the interstices are filled in with papier mache. Thus the papier mache is doubly secured.

Decorative designs in papier mache are made to follow any curvature of the surface by simply placing them when hardened between damp cloths, the moisture thus absorbed affording the requisite pliability. After being a short time in place,—that is, on drying,—it resumes its toughness and remains permanently bent. Thus a series of leaves and stems may be wound round the shaft of a pillar.

In coloring, the whole range of color is available, either water or oil mediums. As the papier mache has simply to be attached much of the work may be done in the shop, and often on this account, with far better effect. The colors are directly laid on the material, for unlike plaster, it does not require a previous coating of oil or varnish.

As compared with plaster, papier mache admits in relief design of a higher degree of refinement or delicacy of form, as in stems or leaves, also of sharper impressions, and consequently of more accurately defined contours. It also allows of greater softness of color. Superior lightness is often claimed for it, but as all the materials in its composition are of a dense character, the term has only a relative significance in the less amount usually required where the relief ornament is accompanied with a ground. Stage furniture is frequently made of this material owing to the slight quantity required to impart the semblance of solidity, and the cousequent ease with which it may be brought out and withdrawn. In combination work it has the advantage over plaster that it is all in one piece, and even over wood carving where the design is of considerable extent. Ornament in papier mache can be made, too, without any background.

Architects employ it among other purposes for the groining of vaulted roofs, for simulated ceiling beams where panels are required, the panels being centered with ornaments in relief, also for archivolts, pendants, arches of reredos, pinnacles, etc. The divisional spacing in relief work effected by its means on walls and ceilings greatly facilitates the work of the colorist, and aids in more varied styles of treatment with the pencil and brush. An interesting application is in the covering of iron and brick columns, subsequent coloring and gilding affording an admirable finish. The papier mache enwrapping the columns itself sustains no weight. The shafts of the columns may be fluted, or be engirt with foliage, the bases have ornamental borders and relief designs in center, whilst the capitals may have undercut enrichments. Care should, however, be used in respect to the intensity of secondary colors, for anything more than ornamental details. Modified by white their character is entirely changed; they are then, perhaps, of all colors the most fit for grounds or small masses of ornament. Even the primaries when greatly modified by white whether by actual mixture or juxtaposition may be at times applied to the same uses, though ordinarily objectionable. In ornamentation of furniture papier mache receives one of its most extensive applications. The pigments corresponding to the color of the wood are inserted for this purpose in the papier mache composition whilst boiling. The reliefs thus bear the appearance of being cut from the solid wood and are not distinguishable from carving.

The long period in which papier mache has been applied to decorative purposes on the continent of Europe has rendered it there an important industry and a great deal of European stamped work is imported here. Such work is rendered available by the variety and beauty of the designs. Countless instances, however, can be cited of admirable work executed from American designs in this country. We may refer for instance to the new public library of Boston, where the ceiling and walls of a room 218 x 63 feet and fifty feet high, are thus treated; also the hall of the Froon Schaft club, 72nd street and Park avenue, New York.

In view of the wide scope for decorative effect that papier mache affords, there is no marvel in its growing popularity, though costing double the price of plaster, and that architects as well as professional decorators should have so largely availed themselves of its qualities. It has become all but indespensable in the way of enrichments for handsome cabinet work at moderate price. There are no forms, however intricate, to which it is unequal. It utilizes in the interests of those who value interior adornment countless designs, the product of past genius, admitting of modifications that give them an aspect of originality, or at least conform themselves to surroundings. Carving will always hold its own but its cost limits its use. In papier mache we have a material sufficiently durable and quite as capable of fine effects. The facility with which choice and elaborate designs may be produced is not its least recommendation.

What an extension in the application of papier mache since it was first introduced in the shape of snuff boxes! We owe to it a process resembling in some respects Japanese lacquering by which the surfaces of tables and other articles are handsomely ornamented with spangles of mother of pearl.

On a background of papier mache a coating of japan varnish is laid. Whilst the varnish is yet tacky very thin pieces of mother of pearl, mere films cut out with the scissors to represetn leaves and other designs, are pressed against the surface. The article is then placed in an oven, and on the varnish drying the pearl closely adheres. A further coat of varnish is then put on, indiscriminately over the pearl and all, and when this is dry or has been hardened in the oven, the portions adhering to the pearl pieces are removed with a knife blade, and the whole surface is rubbed smooth with pumice stone and water. With the aid of a gold size, gold leaf and color, using for the latter a camel's hair brush, the design is then developed, the beauty of which depends upon the skill of the artist. Finally the article receives a coat of clear spirit varnish.

Valuable qualities of the material are that it does not contract in cooling but completely corresponds to the mould; further that it is not affected by changes of temperature, is not subject to warping and presents extreme smoothness of surface. It takes all the metallic tints, and accordingly steel armour for theatrical equipments and for trophies, old brass facings for church memorial tablets, and bronze replicas may be produced.

A Japanese inventor has discovered a process by which seaweed can be converted into almost untearable paper, which is transparent enough to admit of its being used as window-panes. In color it resembles old window-glass.